Species

First record of *Orthonama obstipata* Fabricius, 1794 (Geometridae: Larentiinae) from Kashmir Valley, J&K UT, India

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DISCOVERY
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ABSTRACT

Orthonama obstipata Fabricius, 1794 is a moth that belongs to the subfamily Larentiinae and family Geometridae in the order Lepidoptera. Johan Christian Fabricius first described this species in 1794. Except for Northern Russia, the Malay Archipelago as well as Australia and New Zealand, the species is distributed almost globally. In India, the species have been reported from Chandigarh, Uttarakhand and Odisha. The present study communicates the first record of *O. obstipata* from the Inner Himalayan region of Kashmir valley, India with nomenclature, taxonomical description, distribution and photographs provided for the first time from the region.

Keywords: *Orthonama obstipata* Fabricius; Himalayan region; Kashmir valley

1. INTRODUCTION

Among other families of the Geometroidea superfamily, Family Geometridae is one of the diverse families of moths that embraces a unique looping fashion among their larvae or inchworms. The larvae move in a way which appears to "measure the earth" and this unique fashion among its species assigned the name of Geometer moths (*geo*=the earth, and *metron*=measure) derived from Ancient Greek (Heppner, 2008). With around 23000 described species all around the world and over 1400 species from 6 subfamilies indigenous to North America alone, Family Geometridae makes up one of the largest families in Lepidoptera (Ferguson, 2008). So far, 2043 species of Geometer moths have been described, which makes it the second-largest family of moths from India (Sondhi et al. 2020; Dey et al. 2021).

Moths of Subfamily Larentiinae are small to medium-sized and the wing pattern of these moths is sometimes inconspicuous with transverse lines twisted. The diversity in the family Larentiinae is widespread across the temperate regions; however, reports are signifying the increase of these moths from the altitudinal tropics and poles (Ounap et al., 2016). With more than 6200 described species, Larentiinae is the second-largest subfamily of moths

among the vast Geometridae family (Scoble & Hausmann, 2007; Hausmann & Viidalepp, 2012).

Kashmir valley is one of the diverse regions in terms of fauna and flora. During random surveys to assess the diversity of moths in Tehsil Herman of District Shopian Kashmir (Fig. 1). Few moth specimens belonging to different families were collected and based on a critical study of the specimens and expert opinions received among the collected species, the specimen *O. obstipata* was collected for the first time from the Northwestern Himalayas, Kashmir valley, India. The present study hereby reports this species as an addition to the moth inventory of Jammu and Kashmir Union Territory, India. A brief description along with a mounted specimen and live photograph of the species has been provided to facilitate easy identification of this taxon in future studies.

2. SPECIES ACCOUNT

Order: Lepidoptera
Superfamily: Geometroidea
Family: Geometridae Stephens, 1829
Subfamily: Larentiinae Duponchel, 1845
Genus: Orthonama Hübner, 1825
Species: *O. obstipata* Fabricius, 1794
Homotypic synonym: *Nycterosea obstipata* Fabricius, 1794
Basionym: *Phalaena obstipata* Fabricius, 1794
Type Depository: Barbaria (Coll. Mus. Dom. Desfontaines)

Distribution
India: Uttarakhand, Chandigarh, Odisha (Anonymous. 2022), Jammu and Kashmir UT (Present study).
Global: North and South America, Europe, Southern and Eastern Asia, Africa (*O. obstipata* in GBIF Secretariat, 2021; Schulze& Fiedler, 2004) (Fig. 2)
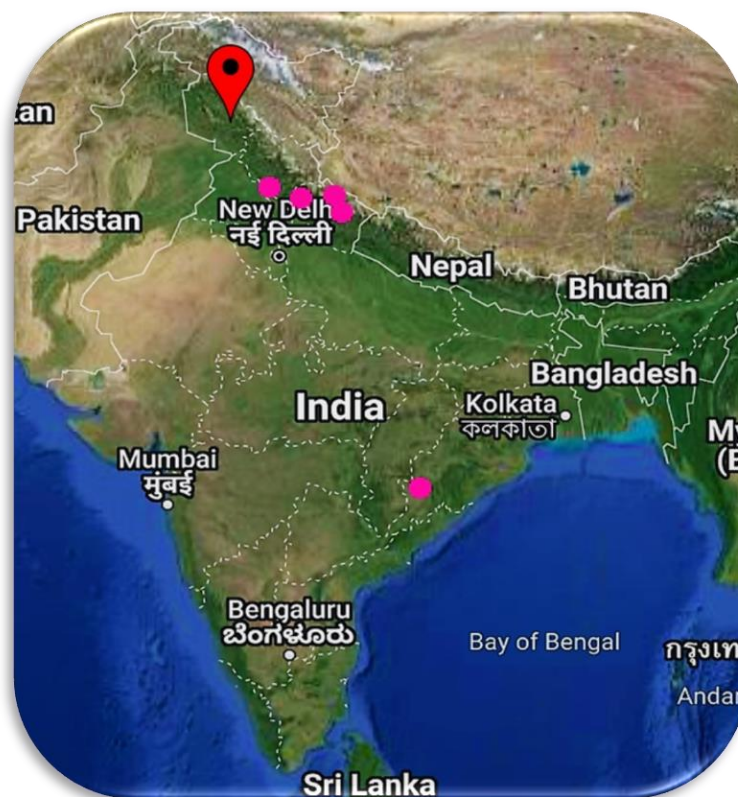
Figure 1. Distribution of the *O. obstipata* in India (Pink dots) and the location assessed in the present study (Red location mark) (Source: Moths of India, 2022)
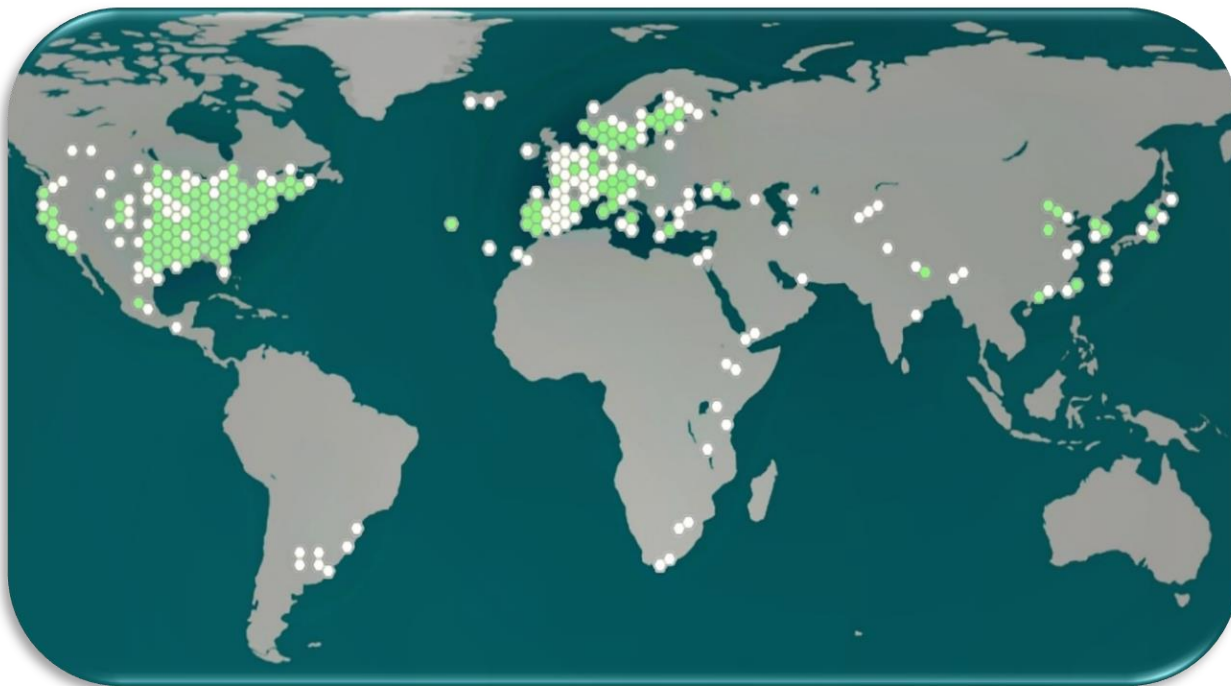
Figure 2. Global Distribution of the *Orthonama obstipata* (Source: GBIF.org 2022)

Active Period: May to July

Habitat: Agricultural type.

Larval Host Plants: *Annona glabra* (Annonaceae), *Anthemis, Eupatorium* spp., *Chrysanthemum spp*., *Senecio vulgaris* (Asteraceae), *Convolvulus* (Convolvulaceae), *Eucalyptus spp.* (Myrtaceae), *Galium spp.* (Rubiaceae), *Ocimum* (Lamiaceae), *Persicaria hydropiper*, *Rumex spp.* (Polygonaceae), *Rorippa spp*. (Brassicaceae), *Ulmus spp*. (Ulmaceae) (Robinson et al., 2010).

Specimen examined

1 ♀, INDIA, Jammu and Kashmir, District Shopian, Tehsil Herman, 33.7050N, 74.9400E, 1,596m, 01.06.2022, Muzafar Riyaz, Voucher specimen (ERIB-KMR-275) preserved in the insect museum of Division of Taxonomy & Biodiversity, Entomology Research Institute, Loyola College, Chennai, Tamil Nadu, India.

Species description

O. obstipata ♀ (Fig. 3 A-B). Wingspan 22 mm. This species is strongly sexually dimorphic. In females, the wing colouration is considerably dark and the black discoidal spot on the forewing is typically encircled with white layering. The wingspan based on the published data ranges between 15-22 mm (Covell, 1984). In males, the wing colouration is yellowish-brown with a darker area between the wing base and the median line. A small black discoidal spot is located in the centre of the forewing. The lines on both wings are generally obscure (Schulze & Fiedler, 2004).

Hampson (1895) reported this species as *Cidaria fluviata* in the Fauna of British India including Ceylon and Burma. Moths, Vol. 3. Parsons et al. (1999) included *Nycterosea* Hulst, 1896; *Percnoptilota* Hulst, 1896; and *Plemyria* Hübner, 1825 as junior synonyms of *Orthonama* Hübner, 1825 and included 28 species and 4 subspecies (inc. nominates) in the genus *Orthonama*.

Larvae of *O. obstipata* are feeding on a wide variety of herbaceous as well as woody plant taxa (Scoble, 1999). These generalized feeding habits facilitate the wide geographical distribution of the moth. Thus, *O. obstipata* should find appropriate host plants also at the localities around the vast agricultural fields in Kashmir valley.

Figure 3. *O. obstipata* ♀ A. Live photograph B. Mounted specimen
(*Mounted and Photographed by Muzafar Riyaz*)

3. CONCLUSION

At the foothills of Pir Panjal mountain range, Kashmir valley is one of the biodiversity hotspots in the Inner Himalayas of India with a rich diversity of flora and fauna (Riyaz and Reshi, 2021; Riyaz, 2022a). The biodiversity of insects particularly the moths from the region has been not been documented in a proper manner. The monitoring of the biodiversity particularly the insects is a need of the hour as the high elevation in the decline of the insects has been reported across the globe. The Faunistics, new records and rediscoveries of the taxa will help in future studies and will encourage the young researchers to travel across the unexplored areas of the Kashmir Himalayas as new many species await discovery (Riyaz, 2022b).

Conflicts of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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